AMENDMENTS

Please amend the captioned application as follows:

In the Claims

Please cancel claim 30-43 without prejudice or disclaimer.

Please substitute the following claims 1-29 and 44 for claims of the same number previously pending.

1. (Amended) A signal measurement system comprising:

an acquisition memory; and

a pulse management system configured to automatically perform a series of pulse measurements on a previously-acquired time-varying analog signal comprising a plurality of pulses, samples of which are stored in the acquisition memory, wherein the pulse management system generates for storage in an accessible data structure pulse characteristics of each of the plurality of pulses, wherein for each of the plurality of pulses, said pulse characteristics comprise results of the one or more pulse measurements.

2. (Amended) The signal measurement system of claim 1, wherein said signal measurement system comprises an oscilloscope.

3. (Amended) The signal measurement system of claim 1, wherein said pulse management system is constructed and arranged to perform said series of pulse measurements on said previously-acquired signal automatically and without operator involvement.

4. (Amended) The signal measurement system of claim 1, wherein said pulse management system comprises:

a histogrammer that samples the acquired signal to generate at least one histogram, said histogram comprising a distribution of number of occurrences that said acquired signal attained each of a plurality of signal levels over a specified time range; and

a mode finder that identifies one or more modes of said histogram representing one or more signal levels that occur most frequently in said histogram, each of said one or more modes representing a signal level having a logical interpretation.

5. (Amended) The signal measurement system of claim 4, wherein said pulse management system further comprises:

a transition calculator that determines a transition signal level at each of one or more transition percentages, wherein each of said one or more transition percentages is a percentage of a difference between two of said signal levels having a logical interpretation.

Cont A1

6. (Amended) The signal measurement system of claim 5, wherein said pulse management system further comprises:

a data analyzer that processes said acquisition signal sample data to determine transition times at which each of said plurality of pulses attains each of said transition signal levels.

7. (Amended) The signal measurement system of claim 6, wherein said pulse management system further comprises:

a pulse measurement engine that performs said plurality of pulse measurements on said each said plurality of pulses utilizing said transition times and said pulse type indication.

8. (Amended) The signal measurement system of claim 6, wherein said plurality of pulse measurements are predetermined.

9. (Amended) The signal measurement system of claim 6, wherein said pulse characteristic data further comprises:

results of statistical analyses performed on said pulse measurement results.

10. (Amended) The signal measurement system of claim 6, wherein said measurement parameters are provided by the operator.

11. (Amended) The signal measurement system of claim 3, wherein said pulse management system further comprises:

a transition calculator that determines the signal level at each specified transition percentage based on one or more signal levels for each logical state of the plurality of pulses in the acquired signal including at least a top signal level and base signal level, wherein said one or more signal levels are provided by the operator.

12. (Amended) The signal measurement system of claim 4, wherein said histogram comprises a table stored in memory that lists the quantity of sampled occurrences said acquired signal attained each of a plurality of signal level value over a certain time range.

13. (Amended) The signal measurement system of claim 12, wherein said acquired signal is a voltage signal, and wherein said signal levels represented in said histogram are voltage levels.

14. (Amended) The signal measurement system of claim 4, wherein an acquisition memory stores acquisition data pertaining to a plurality of acquired signals, and wherein said measurement parameters includes a source indication that indicates which of said plurality of acquired signals is to be processed by said histogrammer.

15. (Amended) The signal measurement system of claim 4, wherein said acquired signal comprises two signal levels having a logical interpretation, and wherein said histogram is nominally a bimodal signal level distribution.

16. (Amended) The signal measurement system of claim 4, wherein said measurement parameters includes an indication of the number of signal levels of said acquired signal have a logical representation, wherein said mode finder utilizes said indication to identify a corresponding number of modes of said histogram.

17. (Amended) The signal measurement system of claim 4, wherein said acquired signal is an alternate mark inversion communication signal that transitions between three signal values, and wherein said mode finder identifies three modes in said histogram.

18. (Amended) The signal measurement system of claim 4, wherein said mode finder implements a smoothing function to identify any of said one or more modes of said histogram that is not well defined.

cont a1

19. (Amended) The signal measurement system of claim 5, wherein said signal levels having a logical interpretation include a top signal level and a base signal level, and wherein said transition calculator determines transition signal levels achieved by each pulse at said transition percentages of the signal transitions between said top and base signal levels.

20. (Amended) The signal measurement system of claim 19, wherein said transitional percentages comprise 10%, 50% and 90% of the difference between said top signal level and said base signal level.

21. (Amended) The signal measurement system of claim 19, wherein said transition percentages are provided by the operator through a user interface.

22. (Amended) The signal measurement system of claim 1, wherein said pulse management system comprises:

a transition calculator that determines the signal level at each specified transition percentage based on one or more signal levels for each logical state of the pulse in the acquired signal including at least a top signal level and base signal level, wherein said one or more signal levels are provided by the operator.

23. (Amended) The signal measurement system of claim 7, wherein said pulse measurements comprise one or more of the group consisting of rise time; fall time; pulse width; preshoot; pulse area; minimum voltage; maximum voltage; average voltage; volts AC RMS; volts DC RMS; amplitude voltage; base voltage; top voltage; upper voltage; middle voltage; lower voltage; plus width; minus width; positive duty cycle; negative duty cycle; period; phase; frequency; delta time; peak-to-peak voltage; and overshoot.

24. (Amended) The signal measurement system of claim 1, wherein said signal measurement system is a digital oscilloscope.

25. (Amended) A signal measurement system comprising:

an acquisition memory; and

a pulse management means for automatically performing a series of pulse measurements on a previously-acquired time-varying analog signal comprising a plurality of pulses, samples of which are stored in the acquisition memory, and for generating for storage in an accessible data structure pulse characteristics of each of the plurality of pulses, wherein for each of the plurality of pulses, said pulse characteristics comprise results of the one or more pulse measurements.

26. (Amended) The signal measurement system of claim 25, wherein said pulse management means comprises:

means for generating at least one histogram of said acquired signal; and

means for identifying one or more modes of said histogram.

27. (Amended) The signal measurement system of claim 26, wherein said pulse management means further comprises:

means for determining a transition signal level at each of one or more transition percentages, wherein each of said one or more transition percentages is a percentage of a difference between two of said signal levels having a logical interpretation.

28. (Amended) The signal measurement system of claim 27, wherein said pulse management means further comprises:

means for determining transition times at which each pulse attains each of said transition signal levels.

29. (Amended) The signal measurement system of claim 28, wherein said pulse management means further comprises:

means for performing said plurality of pulse measurements on each of said plurality of pulses utilizing said transition times and said pulse type indication.

44. (Amended) A method for generating a pulse data structure for storage in a memory apparatus operationally coupled to a signal measurement system, said data structure comprising a plurality of signal pulse characteristics of pulses of an previously-acquired time-varying analog signal samples of which are stored in an acquisition memory of the signal measurement system, the method comprising the steps of:

1) automatically performing a series of pulse measurements on a previously-acquired time-varying analog signal comprising a plurality of pulses, samples of which are stored in the acquisition memory; and

2) generating for storage in an accessible data structure pulse characteristics of each of the plurality of pulses, wherein for each of the plurality of pulses, said pulse characteristics comprise results of the one or more pulse measurements.

Please add the following new claims 52-65:

52. (New) The signal measurement system of claim 1, wherein said pulse characteristics are stored in a signal pulse characteristic data unit which comprises:

a pulse identifier data unit uniquely identifying each said pulse of said acquired signal, and

a plurality of pulse measurement results data units associated with each said pulse identifier.

53. (New) The signal measurement system of claim 52, wherein said signal pulse characteristics further comprise:

a time of occurrence data unit associated with each pulse identifier data unit in said data structure, said time of occurrence data unit indicating a time said associated pulse occurred relative to a time at which a trigger event causing said storage of said acquired signal occurred.

54. (New) The signal measurement system of claim 53, wherein said data structure further comprises:

global measurement statistics data units for one or more of said plurality of pulse measurements, wherein said global statistics are associated with said acquired signal in said data structure.

55. (New) The signal measurement system of claim 52, wherein said pulse identifier data unit is a value indicating a relative occurrence of said associated pulse relative to other pulses of said acquired signal.

56. (New) The signal measurement system of claim 54,

wherein said acquired signal is one of a plurality of acquired signals, the acquisition data for each of which is stored in an acquisition memory,

wherein said pulse data array includes said pulse characteristics data units and said global measurement statistics data units for a plurality of acquired signals,

wherein each such pulse characteristics data units and global measurement statistics data units are associated with said unique identifier of said acquisition.

57. (New) The signal measurement system of claim 52, wherein said data structure has a data format suitable for the implementing application.

58. (New) The signal measurement system of claim 53, wherein said pulse characteristics further comprise:

a pulse type data unit associated with each of said plurality of pulse identifier data units, said pulse type data unit indicting whether said corresponding signal pulse is a positive or negative pulse.

59. (New) The signal measurement system of claim 54, wherein each of said plurality of pulse measurement results data unit associated with each of said plurality of pulse identifier data units in said data structure comprise one or more of the group consisting of:

rise time measurement results;
fall time measurement results;
pulse width measurement results;
preshoot measurement results;
pulse area measurement results;
minimum voltage measurement results;
maximum voltage measurement results;
average voltage measurement results;
volts AC RMS measurement results;
volts DC RMS measurement results;
amplitude voltage measurement results;
base voltage measurement results;
top voltage measurement results;
upper voltage measurement results;
middle voltage measurement results;
lower voltage measurement results;
plus width measurement results;
minus width measurement results;
positive duty cycle measurement results;
negative duty cycle measurement results;
period measurement results;
phase measurement results;
frequency measurement results;
delta time measurement results;
peak-to-peak voltage measurement results; and
overshoot measurement results.

60. (New) The signal measurement system of claim 52, wherein said plurality of pulse identifier data units and said associated pulse characteristic data units are arranged in said data structure in a same sequence as said corresponding signal pulses occur.

61. (New) The signal measurement system of claim 52, wherein said pulse characteristic data units and said pulse identifier data units are stored in said pulse data structure automatically and with no operator involvement.

62. (New) The signal measurement system of claim 52, wherein said data structure is populated automatically and in accordance with measurement parameters.

63. (New) The signal measurement system of claim 62, wherein said measurement parameters are provided at least in part by the operator through a user interface operatively coupled to the signal measurement system.

64. (New) The signal measurement system of claim 52, wherein said data structure is generated and populated by said pulse characteristics in response to an acquisition memory storing said acquired signal.

65. (New) The signal measurement system of claim 52, wherein said signal measurement system is a digital oscilloscope.

REMARKS

1. In response to the Office Action mailed May 14, 2002, Applicant respectfully requests reconsideration. Claims 1-5 were originally presented for examination in this application. Claims 30-43 were withdrawn from consideration. In the Office Action, claims 1-29 and 44-51 were rejected. By the foregoing amendments, claims 1-29 and 44 have been amended. Claims 30-43 have been canceled and claims 52-65 have been added. Thus, claims 1-29 and 44-65 are pending in this application after entry of this paper. Based on the above Amendments and following Remarks, Applicant respectfully